

EXHIBIT 4

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Paper 13
Date: August 19, 2022

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMMSCOPE, INC.,
Petitioner,

v.

TQ DELTA, LLC,
Patent Owner.

IPR2022-00352
Patent 8,462,835 B2

Before JONI Y. CHANG, JENNIFER MEYER CHAGNON, and
ROBERT J. WEINSCHENK, *Administrative Patent Judges*.

CHANG, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

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I. INTRODUCTION

CommScope, Inc. (“Petitioner” or “CommScope”) filed a Petition requesting an *inter partes* review (“IPR”) of claims 8–10, 15, 24–26, and 31 (“the challenged claims”) of U.S. Patent No. 8,462,835 B2 (Ex. 1001, “the ’835 patent”). Paper 2 (“Pet.”), 1. TQ Delta, LLC (“Patent Owner”) filed a Preliminary Response (Paper 6, “Prelim. Resp.”). Petitioner filed an Updated Mandatory Notices (Paper 7) on July 8, 2022, identifying ARRIS Solutions, Inc. (“ARRIS Solutions”) as a real party in interest (“RPI”) and indicating that 2Wire, Inc. (“2Wire”), a time-barred entity, was merged into ARRIS Solutions. *Id.* at 2. Pursuant to our prior authorization, Patent Owner filed a Response to Petitioner’s Updated Mandatory Notices (Paper 10) and Petitioner filed a Reply to Patent Owner’s Response to Petitioner’s Updated Mandatory Notices (Paper 12).

For the reasons stated below, we determine that the Petition is time-barred under 35 U.S.C. § 315(b).

A. Related Matters

The parties indicate that the ’835 patent is involved in the following proceedings: *TQ Delta, LLC v. 2Wire, Inc.*, Case No. 1:13-cv-01835 (D. Del.), filed November 4, 2013 (the “Delaware case”); *TQ Delta, LLC v. ADTRAN, Inc.*, Case No. 1:14-cv-00954 (D. Del.), filed July 17, 2014; *ADTRAN, Inc. v. TQ Delta, LLC*, Case No. 1:15-cv-00121 (D. Del.), filed July 17, 2014 (transferred from Alabama Northern on February 3, 2015); and *TQ Delta, LLC v. CommScope Holding Co.*, Case No. 2:21-cv-00310

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(E.D. Tex.), filed August 13, 2021 (the “Texas case”). Pet. 71; Paper 3, 2–3; *see also* Prelim. Resp. 34.

The ’835 patent is also involved in *Nokia of America Corp. v. TQ Delta, LLC*, IPR2022-000471 (PTAB, filed Jan. 21, 2022), which we instituted a review on August 18, 2022. *See* IPR2022-00471, Paper 11 (Institution Decision).

B. The ’835 Patent

The ’835 patent is related to impulse noise management in communication systems. Ex. 1001, code (54), 1:20–25. According to the ’835 patent, communication systems often operate in environments that produce impulse noise, which is a short-term burst of noise that is higher than the normal noise that typically exists in a communication channel. *Id.* at 1:27–30. For example, digital subscriber line (“DSL”) systems operate on telephone lines and experience impulse noise from many external sources. *Id.* at 1:30–32. It is standard practice for communication systems to use interleaving in combination with forward error correction (“FEC”) to correct the errors caused by impulse noise. *Id.* at 1:34–37. Standard initialization procedures in asymmetrical digital subscriber line (“ADSL”) and very-high-bit-rate digital subscriber line (“VDSL”) systems are designed to optimize performance in the presence of “stationary” crosstalk or noise. *Id.* at 1:37–40. Impulse noise protection is handled with interleaving and FEC. *Id.* at 1:40–41. Impulse noise protection (“INP”) is defined in the ADSL2 Standard G.992.3, as the number of impulse noise corrupted discrete

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multitone transceiver (“DMT”) symbols that can be corrected by the FEC and interleaving configuration. *Id.* at 1:65–2:2. Specifically, G.992.3 defines the following variables:

$$\begin{aligned} \text{INP} &= 1/2 * (\text{S} * \text{D}) * \text{R} / \text{N}; \\ \text{S} &= 8 * \text{N} / \text{L}; \\ \text{Latency (or delay)} &= \text{S} * \text{D} / 4; \text{ and} \\ \text{Line Rate (in kbps)} &= \text{L} * 4, \end{aligned}$$

where N is the codeword size in bytes, R is the number of parity (or redundancy) bytes in a codeword, D is the interleaver depth in number of codewords, and L is the number of bits in a DMT symbol. *Id.* at 2:2–15. If K is the number of information bytes in a codeword then $\text{N} = \text{K} + \text{R}$ and the user data rate is approximately equal to: $\text{L} * 4 * \text{K} / \text{N}$. *Id.* at 2:16–21. In general, DSL systems (such as the one defined in ADSL G.992.x or VDSL G.993.x) use the FEC and interleaving parameters (“FIP”) characterized by the set of parameters (N, K, R, D). *Id.* at 2:22–25.

The ’835 patent discloses that a communication system adapts the impulse noise parameters on-line by operating using a series of different FIP settings. *Id.* at 8:21–23. For each FIP setting, the system can determine dynamically if the appropriate amount of impulse noise protection is being provided. *Id.* at 8:23–25. Based on these determinations, the system can select a particular FIP setting for regular (i.e., Showtime) operation. *Id.* at 8:25–27. This impulse noise protection adaptation can be performed during Showtime and/or during initialization. *Id.* at 8:28–30.

The ’835 patent also discloses that the receiver and transmitter can synchronize the modification of the FIP parameters such that both the

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transmitter and receiver start using the parameters at the same instant in time. *Id.* at 11:4–7. This synchronization can be based on a synchronization using FEC codeword counters or a flag signal. *Id.* at 11:7–9.

For the flag signal embodiment, the '835 patent discloses that receiving modem 200 and transmitting modem 300, in cooperation with synchronization module 280 and synchronization module 320, “synchronize the change in FIP settings using a flag or marker signal that is similar to that used in the ADSL2 G.992.3 ORL protocol.” *Id.* at 11:66–12:5.

Additionally, “the receiver and transmitter would start using updated FEC and interleaving parameters on a pre-defined FEC codeword boundary following the sync flag.” *Id.* at 12:8–11. For example, while transmitting using a first INP setting, a determination is made that a new FIP setting is needed due to the presence of impulse noise in the line. *Id.* at 12:11–14. Receiving modem sends a message to transmitting modem indicating the new FIP settings to be used for transmission and reception. *Id.* at 12:17–20. Transmitting modem then sends a flag or marker signal to receiving modem indicating the new FIP settings are to be used on a predetermined number of DMT symbols following the transmission of the flag or marker signal. *Id.* at 12:25–29. “For example, the flag signal could be an inverted sync symbol, or syn FLAG, as used in the ADSL2 G.992.3 OLR protocol.” *Id.* at 12:29–31. Transmitting modem and receiving modem then start using the new FIP settings for transmission on the predetermined number of DMT symbols following the transmission of the flag or market signal. *Id.* at 12:31–34.

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C. Illustrative Claim

Of the challenged claims, claims 8 and 24 are independent. Claims 9, 10 and 15 depend from claim 8, and claims 25, 26 and 31 depend from claim 24. Claim 8 is illustrative:

8. An apparatus configurable to adapt forward error correction and interleaver parameter (FIP) settings during steady-state communication or initialization comprising:

[8.a] a transceiver, including a processor, configurable to:

[8.b] transmit a signal using a first FIP setting,

[8.c] transmit a flag signal, and

[8.d] switch to using for transmission, a second FIP setting following transmission of the flag signal,

wherein:

[8.e] the first FIP setting comprises at least one first FIP value,

[8.f] the second FIP setting comprises at least one second FIP value, different than the first FIP value, and

[8.g] the switching occurs on a pre-defined forward error correction codeword boundary following the flag signal.

Ex. 1001, 21:33–46.

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D. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability (Pet. 10)¹:

Claims Challenged	35 U.S.C. §	References
8–10, 15, 24–26, 31	102(b)	G.992.1 ²
8–10, 15, 24–26, 31	103(a)	SC-060 ³
8–10, 15, 24–26, 31	103(a)	G.992.1, SC-060
8–10, 15, 24–26, 31	103(a)	G.992.1, Wunsch ⁴

II. ANALYSIS

A. Whether the Petition is Time-Barred under § 315(b)

Patent Owner argues that the Petition is time-barred under § 315(b) because 2Wire is a real party in interest. Prelim. Resp. 9–30. According to

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. §§ 102 and 103, effective March 16, 2013. Because the ’835 patent was filed before this date, we refer to the pre-AIA versions of §§ 102 and 103. Ex. 1001, code (22).

² International Telecommunication Union, Telecommunication Standardization Sector (“ITU-T”) Recommendation G.992.1 (1999) (Ex. 1004, “G.992.1”).

³ ITU-T SG15/Q4 Contribution SC-060 (Ex. 1005, “SC-060”).

⁴ Wunsch, U.S. Patent Application Publication No. 2002/0172188 (Ex. 1006).

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Patent Owner, 2Wire was served with a complaint alleging infringement of the '835 patent on February 7, 2014—almost eight years before the filing of the Petition. *Id.* For the reasons stated below, we find that the Petition is time-barred under § 315(b).

1. Background

Patent Owner served 2Wire with a complaint alleging infringement of the '835 patent on February 7, 2014. Prelim. Resp. 12–16; Ex. 1034 (Second Amended Complaint in the Delaware case). On August 13, 2021, Patent Owner filed a separate lawsuit against CommScope, CommScope Holding Company, and several ARRIS subsidiaries alleging infringement of the '835 patent in the Eastern District of Texas. Ex. 1028 (Complaint filed in the Texas case); Prelim. Resp. 35.

The Petition identifies CommScope Holding Company, Inc. and CommScope as RPIs. Pet. 64. In its Updated Mandatory Notices, “Petitioner identifies ARRIS US Holdings, Inc., ARRIS Solutions, Inc., ARRIS Technology, Inc., and ARRIS Enterprises, Inc. as additional real parties in interest.” Paper 7, 2. Petitioner also states that “2Wire, Inc. was merged into ARRIS Solutions, Inc. and no longer exists.” *Id.*; *see also* Ex. 2009, 1 (Amended Corporate Disclosure Statement in the Delaware case). CommScope filed a motion to stay in the related Texas case, indicating that “[o]n April 4, 2019, CommScope Holding Company, Inc. acquired the successor-in-interest of 2 Wire.” Ex. 2035, 5 (CommScope’s Motion to Stay the Texas case).

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On August 5, 2022, the parties in IPR2022-00471 jointly notified the Board via email that the validity trial for the '835 patent in the Delaware case, in which 2Wire is still identified as the defendant, was declared a mistrial and that the validity trial for the '835 patent has been rescheduled for November 28, 2022. Ex. 3001; IPR2022-00471, Ex. 2036, 1 (July 19, 2022 Minute Entry Declaring a Mistrial in the Delaware case, identifying 2Wire as the defendant); IPR2022-00471, Ex. 2037, 1 (August 4, 2022 Email from Court Rescheduling Trial for November 28, 2022, in the Delaware case, identifying 2Wire as the defendant); *see also* Paper 9, 3 (Second Updated Mandatory Notices filed by Petitioner on August 4, 2022).

2. Principles of Law

Section 315(b) of Title 35 of the United States Code provides:

(b) PATENT OWNER'S ACTION.—An inter partes review may not be instituted if the petition requesting the proceeding is filed more than 1 year after the date on which the petitioner, real party in interest, or privy of the petitioner is served with a complaint alleging infringement of the patent. The time limitation set forth in the preceding sentence shall not apply to a request for joinder under subsection (c).

“Whether a party who is not a named participant in a given proceeding nonetheless constitutes a ‘real party-in-interest’ or ‘privy’ to that proceeding is a highly fact-dependent question” and is assessed “on a case-by-case basis.” *See* Consolidated Trial Practice Guide (“Consolidated Practice Guide”)⁵ at 13 (citing *Taylor v. Sturgell*, 553 U.S. 880, 893–95 (2008); 18A

⁵ Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>; *see*

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Charles Alan Wright, Arthur R. Miller & Edward H. Cooper, Federal Practice & Procedure §§ 4449, 4451).

“To decide whether a party other than the petitioner is the real party in interest, the Board seeks to determine whether some party other than the petitioner is the ‘party or parties *at whose behest the petition has been filed.*’” *Wi-Fi One, LLC v. Broadcom Corp.*, 887 F.3d 1329, 1336 (Fed. Cir. 2018) (emphasis added). “A party that funds and directs and controls an IPR or post-grant review proceeding constitutes a ‘real party-in-interest,’ even if that party is not a ‘privy’ of the petitioner.” *Id.* Also, several relevant factors for determining whether a party is an RPI include the party’s relationship with the petitioner, the party’s relationship to the petition, and the nature of the entity filing the petition. Consolidated Practice Guide at 17–18; *Applications in Internet Time, LLC v. RPX Corp.*, 897 F.3d 1336, 1351 (Fed. Cir. 2018) (“*AIT*”).

The concept of “privy” is more expansive and encompasses parties that do not necessarily need to be identified in the petition as RPIs. Consolidated Practice Guide at 14. The legislative history endorsed the expression of “privy” as follows:

The word “privy” has acquired an expanded meaning. The courts, in the interest of justice and to prevent expensive litigation, are striving to give effect to judgments by extending “privies” beyond the classical description. *The emphasis is not on the concept of identity of parties, but on the practical situation. Privy is essentially a shorthand statement that*

also 84 Fed. Reg. 64,280 (Nov. 21, 2019).

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collateral estoppel is to be applied in a given case; there is no universally applicable definition of privity. *The concept refers to a relationship between the party to be estopped and the unsuccessful party in the prior litigation which is sufficiently close so as to justify application of the doctrine of collateral estoppel.*

154 CONG. REC. S9987 (daily ed. Sept. 27, 2008) (statement of Sen. Kyl) (emphasis added); 157 CONG. REC. S1376 (daily ed. Mar. 8, 2011) (incorporating prior 2008 statement). “[T]he standards for the privity inquiry must be grounded in due process.” *WesternGeco LLC v. ION Geophysical Corp.*, 889 F.3d 1308, 1318–19 (Fed. Cir. 2018). “[T]he privity inquiry in this context naturally focuses on *the relationship* between the named IPR petitioner and the party *in the prior lawsuit*. For example, it is important to determine whether the petitioner and the prior litigant’s relationship—as it relates to the lawsuit—is sufficiently close that it can be fairly said that the petitioner had a full and fair opportunity to litigate the validity of the patent in that lawsuit.” *Id.* (emphases added).

In *Taylor*, the United States Supreme Court identified a non-exhaustive list of six categories under which nonparty preclusion based on a privity relationship may be found: (1) an agreement between the parties to be bound; (2) pre-existing substantive legal relationships between the parties; (3) adequate representation by the named party; (4) the nonparty’s control of the prior litigation; (5) where the nonparty acts as a proxy for the named party to re-litigate the same issues; and (6) where special statutory schemes foreclose successive litigation by the nonparty (e.g., bankruptcy or probate). *Taylor*, 553 U.S. at 893–95, 893 n.6. The Supreme Court noted

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that this list of the six “established grounds for nonparty preclusion” is “meant only to provide a framework . . . , not to establish a definitive taxonomy.” *Id.* at 893 n.6.

Petitioner “bears the ultimate burden of persuasion to show that its petition[is] not time-barred under § 315(b) based on a complaint served on an alleged real party in interest more than a year earlier.” *Worlds Inc. v. Bungie, Inc.*, 903 F.3d 1237, 1242 (Fed. Cir. 2018).

3. RPI Analysis

Patent Owner argues that the Petition is time-barred because 2Wire (now ARRIS Solutions, Inc.) and the ARRIS Entities are RPIs, citing *Power Integrations, Inc. v. Semiconductor Components Industries, LLC dba ON Semiconductor*, 926 F.3d 1306, 1310, 1318 (Fed. Cir. 2019), for support. Prelim. Resp. 17–23; Paper 10, 1–3. CommScope argues that “2Wire is not a real party in interest to this proceeding” because “2Wire merged into ARRIS Solutions, Inc. and no longer exists.” Paper 7, 2. CommScope also argues that “*Power Integrations* was decided on a fundamentally different set of facts,” because “TQ Delta filed a new lawsuit against CommScope and ARRIS in August 2021 and those entities filed an indisputably timely petition against a patent asserted against them in that new lawsuit.” Paper 12, 2–4.

Based on the evidence of record, we agree with Patent Owner that the Petition is time-barred under § 315(b).

It is undisputed that 2Wire is time-barred under § 315(b) because 2Wire was served with a complaint alleging infringement of the ’835 patent

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on February 7, 2014, more than one year before December 31, 2021, the filing date of the Petition. Pet. 65; Ex. 1034; Prelim. Resp. 12. CommScope identifies ARRIS Solutions as an RPI to this IPR proceeding and confirms that “2Wire, Inc. was merged into ARRIS Solutions, Inc.” Paper 7, 2. Indeed, 2Wire’s Amended Corporate Disclosure Statement filed in the Delaware case indicates that “the undersigned counsel of record for 2Wire, Inc. certifies that 2Wire, Inc. has been merged to form ARRIS Solutions, Inc.” and that “[t]his name change is the result of a merger . . . that became effective January 1, 2017.” Ex. 2009, 1. Moreover, CommScope acknowledges that 2Wire is “CommScope’s predecessor-in-interest in the District of Delaware,” and that “[o]n April 4, 2019, CommScope Holding Company, Inc.[, an RPI identified by Petitioner,] acquired the successor-in-interest of 2 Wire.” Ex. 2035, 5; Pet. 64.

In sum, CommScope identifies ARRIS Solutions as an RPI in this IPR proceeding and 2Wire merged with ARRIS Solutions. As a result, we are persuaded that 2Wire is an RPI in this IPR proceeding. Accordingly, the Petition is time-barred under § 315(b). *See Power Integrations, Inc.*, 926 F.3d at 1310, 1318 (holding that the IPR Petition was time-barred under § 315(b) because time-barred entity Fairchild, which had merged with the petitioner, was an RPI at the time of institution).

We are not persuaded by CommScope’s argument that “2Wire is not a real party in interest to this proceeding” because “2Wire merged into ARRIS Solutions, Inc. and no longer exists.” Paper 7, 2. Notably, 2Wire maintains as the named defendant in the Delaware case even after the merger with

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ARRIS Solutions on January 1, 2017. Ex. 1036 (June 28, 2021 Memorandum Opinion in the Delaware case, identifying 2Wire as the defendant).

We also are not persuaded by CommScope's argument that, because "TQ Delta filed a new lawsuit against CommScope and ARRIS in August 2021 and those entities filed an indisputably timely petition against a patent asserted against them in that new lawsuit," *Power Integrations* was decided on a fundamentally different set of facts." Paper 12, 2–4. As CommScope acknowledges, the Federal Circuit in *Power Integrations* held that "the parties were RPIs once the merger closed." *Id.* (citing *Power Integrations*, 926 F.3d at 1318). Here, it is undisputed that time-barred entity 2Wire merged with ARRIS Solutions on January 1, 2017, before the filing of the instant Petition. Ex. 2009, 1. Moreover, the 1-year time-bar under § 315(b) starts when "the petitioner, real party in interest, or privy of the petitioner is served with a complaint alleging infringement of the patent." 35 U.S.C. § 315(b). CommScope does not identify any authority indicating that § 315(b) restarts the 1-year statutory period for filing a petition, initially started when an RPI was served with a complaint alleging infringement of the patent, if the petitioner subsequently is served with a later complaint alleging infringement of the patent.

In light of the foregoing, we determine that the Petition is time-barred under § 315(b).

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4. Privity Analysis

Patent Owner argues that 2Wire is a privy of CommScope. Prelim. Resp. 24–30. According to Patent Owner, 2Wire and CommScope had a preexisting, substantive legal relationship prior to the filing of the Petition and while the Delaware case has been ongoing. *Id.* CommScope argues that “2Wire and the ARRIS entities have not controlled, funded, or otherwise directed this petition,” and that “CommScope should not be barred from filing this petition under § 315(b) on privity grounds due to the application of the bar to 2Wire.” Pet. 68–70.

Based on the evidence before us, we are persuaded that 2Wire and CommScope are in privity. As discussed above, the Supreme Court provided a framework with six categories for analyzing privity. *Taylor*, 553 U.S. at 893–95, 893 n.6.

Under the second *Taylor* category, “nonparty preclusion may be justified based on a variety of pre-existing ‘substantive legal relationship[s]’ between the person to be bound and a party to the judgment.” *Id.* at 894. “Qualifying relationships include, but are not limited to, *preceding and succeeding owners of property*, bailee and bailor, and assignee and assignor.” *Id.* (emphasis added). Indeed, “[c]ourts have repeatedly found privity where, *after a suit begins*, a nonparty acquires assets of a defendant-infringer.” *Power Integrations*, 926 F.3d at 1316. Here, CommScope acknowledges that it became a successor-in-interest to 2Wire during the Delaware case and before filing the Petition. Ex. 2011; Ex. 2035, 4 (2Wire is “CommScope’s predecessor-in-interest in the District of Delaware.”).

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In other words, CommScope has a preexisting substantive legal relationship with 2Wire regarding the accused products at issue in the Delaware case.

Under the fourth *Taylor* category, “a nonparty is bound by a judgment if she ‘assume[d] control’ over the litigation in which that judgment was rendered.” *Taylor*, 553 U.S. at 895. Actual control of a proceeding is not required; rather, preclusion is fair as long as the nonparty had a practical *opportunity* to control the proceeding. Consolidated Practice Guide at 15–16 (“A common consideration is whether the non-party . . . could have exercised control over a party’s participation in a proceeding.”).

CommScope filed a motion to stay the Texas case and indicated that “[Patent Owner] accuses the same products of infringing the patents by practicing the same standards in both [the Delaware and Texas] cases.” Ex. 2035, 4. CommScope asserted that “[i]t is unfair to CommScope to have to defend the same allegations at the same time.” *Id.* In other words, CommScope acknowledges that it controls, or at least has the opportunity to control, the Delaware case. In fact, CommScope even offered to be bound by any invalidity/validity and infringement/non-infringement rulings issued by the court in Delaware relating to the six overlapping patents, including the ’835 patent, if the Texas case is stayed. *Id.* at 8–9.

On this record and based on the particular facts of this proceeding, we are persuaded that 2Wire and CommScope are in privity. Because 2Wire was served with a complaint alleging infringement of the ’835 patent more than one year before the filing of the Petition, the Petition is time-barred

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under § 315(b). Therefore, we do not institute an *inter partes* review on the asserted ground as to any of the challenged claims.

III. ORDER

For the foregoing reasons, it is

ORDERED that the Petition is denied as to all challenged claims of the '835 patent.

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